

WE CLAIM:

1. A distributed network, spread-spectrum system,
comprising:

a plurality of remote stations;

5 a plurality of nodes for covering a geographic area,
the plurality of nodes including a hub node, each node covering
a micro-cell having a radius less than one mile, each node
including,

10 a spread-spectrum transceiver for communicating,
using packets having spread-spectrum modulation, over radio
waves, with the plurality of remote stations, each packet
having a source address and a destination address;

15 a store-and-forward subsystem, coupled to the
spread-spectrum transceiver, for storing and forwarding one
or more packets to and from the remote station, and for
storing and forwarding the one or more packets to and from
another node in the plurality of nodes;

20 a flow-control subsystem, coupled to the store-
and-forward subsystem, for controlling the store-and-
forward subsystem, to store each packet arriving at the
spread-spectrum transceiver, said flow-control subsystem
communicating traffic information between each of the nodes
in the plurality of nodes, with the traffic information
including traffic density at each of the nodes, said flow-
control subsystem, responsive to the traffic information
and to a packet having the destination address to the hub

node, for routing the packet through appropriate nodes to the hub node, said flow-control subsystem, responsive to the traffic at each node, each packet having a destination address to a first recipient node, for transmitting the packet from the hub node to an appropriate node, routing the packet to the first recipient node, said flow-control subsystem, responsive to the traffic congestion and to a plurality of packets having voice data, for routing the plurality of packets through a path in the plurality of nodes to ensure that the plurality of packets arrive sequentially; and

said hub node, responsive to an information packet arriving from a central office, for routing the information packet to a second recipient node.

2. A distributed network, spread-spectrum system, comprising:

a plurality of remote stations;

a plurality of nodes for covering a geographic area, the plurality of nodes including a set of hub nodes, each node covering a micro-cell having a radius less than one mile, each node including,

a spread-spectrum transceiver for communicating, using packets having spread-spectrum modulation, over radio waves, with the plurality of remote stations, each packet having a source address and a destination address;

15 a store-and-forward subsystem, coupled to the spread-spectrum transceiver, for storing and forwarding one or more packets to and from the remote station, and for storing and forwarding the one or more packets to and from another node in the plurality of nodes;

20 a flow-control subsystem, coupled to the store-and-forward subsystem, for controlling the store-and-forward subsystem, to store each packet arriving at the spread-spectrum transceiver, said flow-control subsystem communicating traffic information between each of the nodes in the plurality of nodes, with the traffic information including traffic density at each of the nodes, said flow-control subsystem, responsive to the traffic information and to a packet having the destination address to a particular hub node, for routing the packet through appropriate nodes to the particular hub node, said flow-control subsystem, responsive to the traffic at each node, each packet having a destination address to a first recipient node, for transmitting the packet from the particular hub node to an appropriate node, routing the packet to the first recipient node, said flow-control subsystem, responsive to the traffic congestion and to a plurality of packets having voice data, for routing the plurality of packets through a path in the plurality of nodes to ensure that the plurality of packets arrive sequentially; and

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40 said particular hub node, responsive to an
information packet arriving from a central office, for
routing the information packet to a second recipient node.

3. A distributed network, spread-spectrum method, for a
plurality of remote stations and a plurality of nodes for
covering a geographic area, the plurality of nodes including a
hub node, each node covering a micro-cell having a radius less
than one mile, comprising the steps of:

communicating, using packets having spread-spectrum
modulation, over radio waves, with the plurality of remote
stations, each packet having a source address and a destination
address;

storing and forwarding one or more packets to and from
the remote station;

storing and forwarding the one or more packets to and
from another node in the plurality of nodes;

15 controlling the steps of storing and forwarding, to
store each packet arriving at the spread-spectrum transceiver;

communicating traffic information between each of the
nodes in the plurality of nodes, with the traffic information
including traffic density at each of the nodes;

20 routing, in response to the traffic information and to
a packet having the destination address to the hub node, the
packet through appropriate nodes to the hub node;

transmitting, in response to the traffic at each node,

each packet having a destination address to a first recipient node;
transmitting the packet from the hub node to an appropriate node;

routing the packet to the first recipient node;

routing, in response to the traffic congestion and to a plurality of packets having voice data, the plurality of packets through a path in the plurality of nodes to ensure that the plurality of packets arrive sequentially; and

routing, in response to an information packet arriving from a central office, the information packet to a second recipient node.

4. A distributed network, spread-spectrum system, comprising:

a remote station for transmitting a plurality of packets, with spread-spectrum modulation;

a plurality of nodes, with a first node for receiving the plurality of packets from the remote station, and for relaying the plurality of packets through the plurality of nodes to a hub node;

said hub node for receiving the plurality of packets from the plurality of nodes, and for sending the plurality of packets to a central office.

5. A distributed network, spread-spectrum system, comprising:

a central office for sending a plurality of packets over the distributed network;

a hub node for receiving the plurality of packets from the central office, and for sending the plurality of packets over the distributed network;

a plurality of nodes for relaying the plurality of packets;

a remote station for receiving the plurality of packets relayed by the plurality of nodes.

6. A distributed network, spread-spectrum system, comprising:

a first remote station for transmitting, using spread-spectrum modulation, a plurality of packets to a first node;

a plurality of nodes for relaying the plurality of packets;

a second node for receiving the relayed plurality of packets, and for transmitting, using spread-spectrum modulation, the plurality of packets; and

a second remote station for receiving the plurality of packets transmitted from the second node.

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